

## SPECIFICATION

[Title of the Invention]

5 METHOD OF MANAGING DATA FILES USING REPRESENTATIVE VOICE IN  
PORTABLE DIGITAL APPARATUS

[Brief Description of the Drawings]

FIG. 1 is a perspective view illustrating the front side of a digital camera as a  
10 portable digital apparatus according to the present invention;

FIG. 2 is a rear view illustrating the rear side of the digital camera of FIG. 1;

FIG. 3 is a view illustrating the structure of an incident side of the digital camera  
of FIG. 1;

FIG. 4 is a block diagram illustrating the overall structure of the digital camera of  
15 FIG. 1;

FIG. 5 is a flow chart for explaining a data file management algorithm of the  
digital signal processor of FIG. 4;

FIG. 6 is a block diagram illustrating the data file management structure by the  
execution of the algorithm of FIG. 5;

20 FIG. 7 is a flow chart for explaining an initialization routine of the algorithm of FIG.  
5;

FIG. 8 is a flow chart for explaining a file generation routine of the algorithm of  
FIG. 5;

FIG. 9 is a flow chart for explaining a group generation routine of the algorithm of  
25 FIG. 5;

FIG. 10 is a flow chart for explaining a reproduction routine of the algorithm of  
FIG. 5;

FIG. 11A is a view illustrating a screen of the color LCD panel shown in FIGS. 2  
and 4 during the execution of step 707 of the reproduction routine of FIG. 10;

FIG. 11B s a view illustrating a screen of the color LCD panel shown in FIGS. 2 and 4 during the execution of step 711 of the reproduction routine of FIG. 10; and

FIG. 11C s a view illustrating a screen of the color LCD panel shown in FIGS. 2 and 4 during the execution of step 712 of the reproduction routine of FIG. 10.

5 < Explanation of Reference numerals designating the Major Elements of the Drawings >

- 1... digital camera
- 11... self-timer lamp
- 12... flash
- 13... shutter button
- 10 14... mode dial
- 15... function section button
- 16... photography information display portion
- 17a, 17b... viewfinder
- 18... function block button
- 15 19... flash light quantity sensor
- 20... lens portion
- 21... external interface portion
- MIC... microphone
- SP... speaker
- 20 31... power button
- 32... monitor button
- 33... auto-focus lamp
- 34... flash ready lamp
- 35... display panel
- 25 36... confirm/delete button
- 37... enter/reproduce button
- 38... menu button
- 39w... wide angle zoom button
- 39t... telephoto zoom button

	40up... upward movement button
	40ri... rightward movement button
	40lo... downward movement button
	40le... leftward movement button
5	OPS... optical system
	41... filter portion
	42... representative voice button
	ZL... zoom lens
	FL... focus lens
10	CL... compensation lens
	OLPF... optical low pass filter
	IRF... infrared cut filter
	OEC... optoelectric converting portion
	M <sub>z</sub> ... zoom motor
15	M <sub>F</sub> ... focus motor
	M <sub>A</sub> ... aperture motor
	501... CDS-ADC device
	502... timing circuit
	503... clock watch
20	504... DRAM
	505... EPROM
	506... memory card interface
	507... DSP
	508... RS232C interface
25	509... video filter
	21a... USB connection portion
	21b... connection portion
	21c... video output portion
	510... lens actuating portion

511... flash controller  
512... microcontroller  
INP... user input portion  
LAMP... lamp portion  
513... audio processor  
514... LCD driving portion

[Detailed Description of the Invention]

[Object of the Invention]

10 [Technical Field of the Invention and Related Art prior to the Invention]

The present invention relates to a method of managing user data files in a portable digital apparatus, and more particularly, to a method of managing user data files in a portable digital apparatus, for example, a digital camera, having a display device and using a recording medium which can be inserted in or detached from the portable digital apparatus.

15 Typical portable digital apparatuses, for example, a digital camera disclosed in U.S. Patent No. 6,167,469, has a limit in a user input function so that a user cannot easily manage one's own data files. Accordingly, there are the following inconveniences in view of a user.

20 First, a user needs to use another apparatus such as a personal computer to manage data files generated in a portable digital apparatus.

Second, a user needs to reproduce all data files to search for a certain data file among the data files stored in a recording medium. For a digital camera, a user must reproduce all data files to search for a certain data file among all data files stored in a recording medium.

25 [Technical Goal of the Invention]

To solve the above and/or other problems, the present invention provides a method of managing data files in a portable digital apparatus by which a user can easily manage one's own data files without using other apparatuses.

5 The present invention provides a method of managing data files in a portable digital apparatus by which user's data files can be automatically grouped in a particular directory and reproduced.

#### [Structure and Operation of the Invention]

10 According to an aspect of the present invention, a method of managing user data files in a portable digital apparatus capable of inserting and ejecting a recording medium and having a display device, the method comprising the steps of: generating representative voice files and data files in a particular directory according to manipulation of a user, indices according to an order of generation of the representative voice files and the data files being sequentially included in names of the representative  
15 voice files and the data files (a file generation step), grouping the data files by unit of the representative voice file according to the indices of the representative voice files and the data files (a group generation step), and displaying representative data files of the respective groups in the particular directory and reproducing the representative voice file corresponding to a group to which the representative data file selected by the user  
20 belongs (a display and reproduction step).

In the file generation step, an index is applied according to the order of generation of the representative voice files and the data files. In the group generation step, the data files are grouped by unit of the representative voice file according to the index of the data files. In the reproduction step, the representative data file and the  
25 representative voice file of each group are reproduced. Accordingly, a user of a portable digital apparatus can conveniently manage one's own data files without using an additional apparatus. Also, the user data files can be automatically grouped in the particular directory and reproduced.

Preferred embodiments of the present invention will now be described with reference to the attached drawings.

Referring to FIG. 1, a microphone (MIC), a self-timer lamp 11, a flash 12, a shutter button 13, a mode dial 14, a function section button 15, a photography information display portion 16, a viewfinder 17a, a function block button 18, a flash light quantity sensor 19, a lens portion 20, and an external interface portion 21 are arranged on the front side of a digital camera 1 which is a portable digital apparatus according to a preferred embodiment of the present invention.

The self-timer lamp 11 flickers in a self-timer mode during a set time after the shutter button 13 is pressed until the photographing starts. The mode dial 14 is used for a user to set a variety of modes, for example, a still image photographing mode, a night view photographing mode, a motion picture photographing mode, a reproduction mode, a computer connection mode, and a system setting mode. The function selection button 15 is used for the user to select one of operational modes of the digital camera 1, for example, the still image photographing mode, the night view photographing mode, the motion picture photographing mode, and the reproduction mode. The photography information display portion 16 displays information of the respective functions related to photography. The function block button 18 is used for the user to select each function displayed on the photography information display portion 16.

Referring to FIG. 2, a representative voice button 42, a speaker SP, a power button 31, a monitor button 32, an auto-focus lamp 33, a viewfinder 17b, a flash ready lamp 33, a display panel 35, a confirm/delete button 36, an enter/reproduce button 37, a menu button 38, a wide angle zoom button 39w, a telephoto zoom button 39t, an upward movement button 40up, a rightward movement button 40ri, a downward movement button 40lo, and a leftward movement button 40le are arranged on the rear side of the digital camera 1 according to the present invention.

When the user presses the representative voice button 42, a representative voice request signal to generate a new directory and a representative voice file corresponding thereto is generated.

The monitor button 32 is used to control the operation of the display panel 35.

5 For example, when the monitor button 32 is first pressed, an image of an object pictured and photography information thereof are displayed on the display panel 35. When the monitor button 32 is second pressed, only an image of the pictured object is displayed on the display panel 35. When the monitor button 32 is third pressed, power applied to the display panel 35 is cut off.

10 The auto-focus lamp 33 is operated when an input image is well focused. The flash ready lamp 34 is operated when the flash 12 of FIG. 1 is in a ready mode. The confirm/delete button 36 is used as a confirm button or a delete button in the process in which the user sets each mode. The enter/reproduce button 37 is used for the user to input data or for the function of stop or reproduction in a reproduction mode. The  
15 menu button 38 is used to display menu of a mode selected by the mode dial 14. The upward movement button 40up, the rightward movement button 40ri, the downward movement button 40lo, and the leftward movement button 40le are used in the process in which the user sets each mode.

FIG. 5 is a flow chart for explaining a data file management algorithm of the  
20 digital signal processor of FIG. 4. Referring to FIGS. 1 through 5, the overall structure and the operation of the digital camera 1 are described below.

When an operation power is applied to the digital camera 1, the DSP 507 executes an initialization routine S4 of the data file management algorithm of FIG. 5. In the initialization routine S4, a particular directory to store data files is searched for  
25 among directories generated on a memory card (not shown) that is a recording medium and is set as a present directory. If there is no particular directory, the particular directory is generated and set as the present directory. When the initialization routine S4 is terminated, the following steps are executed according to the present mode S2.

When a file generation mode signal, that is, a photographing mode signal, is generated by the function selection button 15 in a user input portion INP, the DSP 507 executes the file generation routine S5 of FIG. 5, that is, a photographing routine. Here, the photographing mode signal is one of a still image photographing mode signal, a night view photographing mode signal, and a motion picture photographing mode signal. In the file generation routine S5, representative voice files and data files are generated in a particular directory according to manipulation of a user. Indices according to the order of generation of the representative voice files and the data files are sequentially included in the names of the representative voice files and the data files. Here, when a user presses the representative voice button 42 in the user input portion INP, a representative voice request signal that is a command to generate a new group and a representative voice file corresponding thereof is generated. In this case, the DSP 507 executes recording guide and recording and generates a representative voice file (please refer to steps of S504 and S506 of FIG. 8).

When a reproduction mode signal is generated by the function selection button 15 in the user input portion INP, the DSP 507 executes a reproduction routine S7 after executing the group generation routing S6. In the group generation routine S6, the data files are grouped by unit of a representative voice file according to the indices of the representative voice files and the data files. In the reproduction routine S7, the representative data files of each group generated in a particular directory is displayed and a representative voice file corresponding to the group to which the representative data file selected by the user belongs is reproduced. The file generation routine S5, the group generation routing S6, and the reproduction routine S7 are repeatedly executed until an end signal is input from the outside (Step S8).

An optical system (OPS) including the lens portion 20 and a filter portion 41 optically processes light from an object to be pictured. The lens portion 20 of the OPS includes a zoom lens ZL, a focus lens FL, and a compensation lens CL.

When a user presses the wide angle zoom button 39w or the telephoto zoom button 39t included in the user input portion INP, a signal corresponding thereto is input

to a microcontroller 512. Accordingly, as the microcontroller 512 controls a lens actuating portion 510, a zoom motor  $M_z$  is driven so that the zoom lens ZL is moved. That is, when the wide angle zoom button 39w is pressed, the focal length of the zoom lens ZL decreases so that an angle of view increases. When the telephoto zoom

button 39t is pressed, the focal length of the zoom lens ZL increases so that an angle of view decreases. According to the characteristic, the microcontroller 512 can obtain an angle of view with respect to the position of the zoom lens ZL from design data of the OPS. Here, since the position of a focus lens FL is adjusted in the state in which the position of the zoom lens ZL is set, the angle of view is hardly affected by the position of the focus lens FL.

When the object to be picture is automatically or manually focused, the present position of the focus lens FL changes according to the position of the object to be pictured. Thus, the microcontroller 512 can obtain an object distance from design data, which is a distance between the object to be pictured and the focus lens FL. In an automatic focus mode, the focus motor  $M_F$  is driven as the microcontroller 512 controls the lens actuating portion 510. Accordingly, the focus lens FL is moved from the foremost position to the rearmost position, during which the position of the focus lens FL where a high frequency component of an image signal increases most, for example, the number of driving steps of the focus motor  $M_F$ , is set.

The compensation lens CL is not separately driven since it compensates for the overall refractive index. Reference letter  $M_A$  denotes a motor for driving an aperture (not shown).

In the filter portion 41 of the OPS, an optical low pass filter (OLPF) removes optical noise of a high frequency component. An infrared cut filter (IRF) cuts an infrared component of input light.

An optoelectric converting portion (OEC) of a charge coupled device (CCD) or complementary metal-oxide-semiconductor (CMOS) converts light from the OPS to an electric analog signal. The DSP 507 controls the operation of the OEC and an analog-to-digital converting portion. A correlation double sampler and analog-to-digital

converter (CDS-ADC) device 501 as the analog-to-digital converting portion processes an analog signal from the optoelectric converting portion OEC to remove a high frequency noise and adjust amplitude thereof, and converts the processed analog signal to a digital signal. The DSP 507 controlled by the microcontroller 512 generates a digital image signal classified by brightness and chromaticity signals, by processing the digital signal from the CDS-ADC device 501.

A lamp portion (LAMP) driven by the microcontroller 512 includes a self-timer lamp 11, an auto-focus lamp 33, and a flash ready lamp 34. The user input portion INP includes the shutter button 13, the mode dial 14, the function section button 15, the function block button 18, the monitor button 32, the confirm/delete button 36, the enter/reproduce button 37, the menu button 38, the wide angle zoom button 39w, the telephoto zoom button 39t, the upward movement button 40up, the rightward movement button 40ri, the downward movement button 40lo, and the leftward movement button 40le.

The digital image signal from the DSP 507 is temporarily stored in a DRAM 504. The algorithm and set data needed for the operation of the DSP 507 is stored in an EPROM 505. A memory card of a user is inserted in or detached from a memory card interface 506.

A digital image signal from the DSP 507 is input to a LCD driving portion 514 so that an image is displayed on the color LCD panel 35.

The digital image signal from the DSP 507 can be transmitted through a USB (universal serial bus) connection portion 21a and an RS232C interface 508 and a connection portion 21b thereof, as a serial communication, and a video filter 509 and a video output portion 21c, as a video signal. The DSP 507 includes a microcontroller, for example, a ZR-36410 device manufactured by Zoran that is a U.S. company.

An audio processor 513 outputs a voice signal from a microphone MIC to the DSP 507 or the speaker SP and outputs an audio signal to the speaker SP.

The microcontroller 512 drives a flash 12 by controlling the operation of a flash controller 511 according to a signal from a flash-light amount sensor 19.

FIG. 6 shows a structure of data file management according to execution of the algorithm of FIG. 5. As shown in FIG. 6, a grouped structure is completed by execution of the group generation routine S6 of the algorithm of FIG. 5. Referring to FIG. 6, a directory "DCIM" for storing user data files is generated under the uppermost directory "ROOT" that is generated by formatting the memory card. A particular directory "100ABCDE" for storing data files generated by user's photographing and recording manipulation is generated under the directory "DCIM". The name of the particular directory "100ABCDE" includes an index "100" and a characteristic code "ABCDE". The characteristic code "ABCDE" is named after a company manufacturing portable digital apparatuses such as digital cameras.

In FIG. 6, files "100M0003.WAV" and "100M0077.WAV" are representative voice files of each group. By the execution of the file generation routine S5 of FIG. 5, the name of the representative voice file includes a directory index "100" of the particular directory, a characteristic code "M", and a data file index according to a file generation order. For example, the name "100M0003.WAV" of a representative voice file of the first group includes a directory index "100" of the particular directory, a characteristic code "M", and a data file index "0003" according to a file generation order. Also, the name "100M0077.WAV" of a representative voice file of the second group includes a directory index "100" of the particular directory, a characteristic code "M", and a data file index "0077" according to a file generation order.

Also, by the execution of the file generation routine S5 of FIG. 5, the name of data file includes a characteristic code "ABCD" and a data file index according to a file generation order. For example, the name of a data file "ABCD0078.JPG" includes a characteristic code "ABCD" and a data file index "0078". The characteristic code "ABCD" is named after a company manufacturing portable digital apparatuses such as digital cameras. For reference, after an image data file, for example, "ABCD0078.JPG" is generated, a voice data file, for example, "ABCD0078.WAV" is generated by recording, the indices of these two data files, for example, "0078", are identical (please refer to steps 508 through 513 of FIG. 8). This is because the voice

data file describes the image data file so that the voice data file should be reproduced by being dependent on the image data file.

Thus, the grouped structure as shown in FIG. 6 can be completed by the execution of the group generation routine S6 of FIG. 5. For example, all data files after a certain representative voice file "100M0003.WAV" is stored until another representative voice file "100M0077.WAV", that is, "ABCD0004" - "ABCD0076", are stored in one group. Other data files having no preceding representative voice file, that is, "ABCD0001.JPG" and "ABCD0002.JPG", are included in a basic group.

FIG. 7 shows the initialization routine S4 of the algorithm of FIG. 5. Referring to FIGS. 4, 6, and 7, the initialization routine S4 shown in FIG.

First, whether a memory card is inserted in a memory card interface 506 is determined (Step 400). If the memory card is not inserted, a message requesting insertion of a memory card is displayed on the color LCD panel 35 (Step 401). If the memory card is inserted, a file system of the memory card is initialized (Step 402).

Next, whether there is the uppermost directory "ROOT" generated by formatting the memory card is determined (Step 403). If no uppermost directory is present, the uppermost directory "ROOT" is generated by formatting the memory card (Step 404). Then, the uppermost directory "ROOT" is searched (Step 405).

Next, whether a directory "DCIM" for storing user data files is present in the uppermost directory "ROOT" is determined (Step 406). If the directory "DCIM" is not present, the directory "DCIM" is generated (Step 407). Then, the directory "DCIM" is searched.

Next, whether a directory having an index is present in the directory "DCIM" is determined (Step 409).

If no directory having an index exists in the directory "DCIM", "100" is set as an index of the present directory (Step 410), a new directory is generated as a particular directory (Step 416), the generated particular directory is set as the present directory (Step 417), and then the operation ends. In the new directory generation step 416, the name of the new directory includes the present directory index "100" and the

characteristic code "ABCDE". The characteristic code "ABCDE" is named after a company manufacturing portable digital apparatuses such as digital cameras.

If a directory having an index exists in the directory "DCIM", the directories are sorted in an ascending order according to the index (Step 411). Next, whether the characteristic code of the name of the last directory having the highest index matches the assigned characteristic code "ABCDE" is determined (Step 412). If the characteristic code of the name of the last directory having the highest index does not match the assigned characteristic code "ABCDE", the index of the present directory is set by increasing the highest index by "1" (Step 413), a new directory is generated as a particular directory (Step 416), the generated particular directory is set as the present directory (Step 417), and then the operation ends. If the characteristic code of the name of the last directory having the highest index matches the assigned characteristic code "ABCDE", the last directory having the highest index is a particular directory for storing all data files generated by user's photographing and recording manipulation. Thus, the index of the last directory is set as the index of the present directory (Step 414), the last directory having the index of the present directory is set as the present directory (Step 415), and then the operation ends.

FIG. 8 shows a file generation routine S5 of the algorithm of FIG. 5. Referring to 4, 6, and 8, the file generation routing S5 of FIG. 8 can be divided into three steps.

In the first step (Steps 500 - 503), "1" is added to the highest index of the files stored in the present directory, that is, the particular directory and the index is set as the preset data file index. In the second step (Steps 504 - 507), a representative voice file to which the present data file index is applied is generated by the manipulation of a user and the present data file index is increased by "1". In the third step (Steps 508 - 514), at least one data file to which the present data file index is applied is generated by the manipulation of a user and the present data file index is increased by "1". Referring to FIGS. 4, 6, and 8, the steps of the file generation routine S5 of FIG. 8 are described in detail.

First, whether there is a name having an index is searched for among the names of the data files in the present directory, that is, the particular directory (Step 500). If a name having an index does not exit, the present data file index is set to "0001" (Step 501). If a name having an index exists, the data files are sorted in an ascending order according to the index (Step 502) and the present data file index is set by increasing the highest data file index by "1" (Step 503). Accordingly, the data of the previously stored files can be maintained.

Next, when a representative voice signal is input to the DSP 507 through the user input portion INP and the microcontroller 512 (Step 504), the DSP 507 controls the audio processor 513 and/or the LCD driving portion 514 to perform recording guide and record a voice describing a group input by a user is recorded (Step 505). As an example of the group description, a message such as "A picture taken with friends, Hong and Han, at Surak mountain on April 15, 2002" can be recorded. Next, the DSP 507 generates a representative voice file and stores the recording data in the generated representative voice file (Step 506). Here, the name of the generated representative voice file includes a present directory index, a characteristic code "M", and a data file index according to the order of file generation. The present data file index is increased by "1" (Step 507).

Next, when a photographing command signal is input to the DSP 507 through the user input portion INP and the microcontroller 512 (Step 508), the DSP 507 performs a photographing operation (Step 509). Next, an image file is generated as a user data file and the image data is stored in the generated image file (Step 510). Here, the name of the generated image file includes the characteristic code "ABCD" and the present data file index.

Likewise, when a recording command signal is input to the DSP 507 through the user input portion INP and the microcontroller 512 (Step 511), the DSP 507 controls the audio processor 513 and/or the LCD driving portion 514 to perform recording guide and record a voice describing an image file input by a user (Step 512). As an example of the description of the image file, a message such as "A picture taken with friends, Hong

and Han, at the peak of Surak mountain" can be recorded. Next, the DSP 507 generates a recording file and stores recording data in the generated recording file (Step 513). Here, the name of the generated recording file includes a characteristic code "ABCD" and a present data file index. The present data file index is increased by 5 "1" (Step 514).

In Step 511, when the recording command signal is not input, the present data file index is increased by "1" (Step 514).

The steps after Step 504 are repeatedly performed until an external end signal is input, for example, the power is turned on or the present mode is switched to a 10 reproduction mode (Step 515).

FIG. 9 shows the group generation routine S6 of the algorithm of FIG. 5. Referring to FIGS. 4, 6, and 9, the group generation routine S6 of FIG. 9 can be divided into 6 steps. In the first step (Steps 600 through 604), the lowest one of the indices of the files stored in the present directory, that is, a particular directory, is set as the 15 present data file index and the present group number is set to "1". In the second step (Steps 606 through 609), if a file having the present data file index is a representative voice file, a group having the present group number is generated and the generated group is set as the present group. In the third step (Step 610), the representative voice file is set as a representative voice file of the present group. In the fourth step (Steps 20 611 and 612), the present group number and the present data file index are increased by "1". In the fifth step (Steps 615 through 619), if a file having the present data file index is a user data file, the file having the present data file index is included in the present group and the present data file index is increased by "1". In the sixth step (Step 620), the second through fifth steps are repeated until the present data file index 25 becomes the highest index. Referring to FIG. 9, when the steps 606, 607, and 613 are consecutively performed, a basic group is generated. When the steps 606, 607, and 615 are consecutively performed, the user data file is included in the group without generating a new group.

Referring to FIGS. 4, 6, and 9, the group generation routine S6 of FIG. 9 is described by each step as follows.

First, whether a data file having a data file index exists in the present directory, that is, the particular directory, is determined (Step 600). If a data file having a data file index does not exist, a message notifying the fact is displayed (Step 601) and the program ends.

If a data file having a data file index exists, the data files are sorted in an ascending order according to their indices (Step 602). Next, a data file having a minimum index, that is, an index of the first data file, is set as the present data file index (Step 603). Then, the present group number is set to "1" (Step 604).

Next, whether the name of a data file having the present data file index, as a voice file, includes a directory index of the present directory, a characteristic code "M", and the present data file index is determined (Step 606).

If the name of a data file having the present data file index includes a directory index of the present directory, a characteristic code "M", and the present data file index, a group of the present group number is generated (Step 608) and the generated group is set as a present group (Step 609). The data file having the present data file index is set as a representative voice file of the present group (Step 610). The present group number and the present data file index are respectively increased by "1" (Steps 611 and 612).

If in Step 606 the name of a data file having the present data file index does not include a directory index of the present directory, a characteristic code "M", and the present data file index, whether the present data file index is the index of the first data file is determined (Step 607). After the determination, if the present data file index is the index of the first data file, a basic group is generated (Step 613) and the generated basic group is set as a present group (Step 614). The number of the basic group is set to "0". Meanwhile, if the present data file index is not the index of the first data file, which means that a present group is already set, the program goes to Step 615.

Next, whether the name of a data file having the present data file index, as an image file, includes a characteristic code "ABCD" and the present data file index is determined (Step 615). If the name of a data file having the present data file index does not include a characteristic code "ABCD" and the present data file index, the present data file index is increased by "1" (Step 619). If the name of a data file having the present data file index includes a characteristic code "ABCD" and the present data file index, the file is included in the preset group (Step 616). Also, whether the name of a data file having the present data file index, as a recording file, includes the characteristic code "ABCD" and the present data file index (Step 617). If the name of a data file having the present data file index does not include the characteristic code "ABCD" and the present data file index, the present data file index is increased by "1" (Step 619). If the name of a data file having the present data file index includes the characteristic code "ABCD" and the present data file index, the file is included in the present group (Step 618) and the present data file index is increased by "1" (Step 619). The steps 606 through 619 are repeatedly executed until the present data file index becomes the index of the last data file (Step 620).

FIG. 10 shows the reproduction routine S7 of the algorithm of FIG. 5. FIG. 11A shows a screen of the color LCD panel 35 of FIGS. 2 and 4 at a point when Step 707 of the reproduction routine S7 of FIG. 10 is executed. FIG. 11B shows a screen of the color LCD panel 35 of FIGS. 2 and 4 at a point when Step 711 of the reproduction routine S7 of FIG. 10 is executed. FIG. 11C shows a screen of the color LCD panel 35 of FIGS. 2 and 4 at a point when Step 712 of the reproduction routine S7 of FIG. 10 is executed. Referring to FIGS. 4, 10, through 11C, the reproduction routine S7 is described. That is, when a reproduction mode signal to reproduce data files is input from the user input portion INP, the DSP 507 executes the following data file reproduction algorithm.

First, the number of groups generated according to the execution of the group generation routine of FIG. 9 is checked (Step 700). The size of a screen of the color

LCD panel 35 is obtained (Step 701). The representative image files of each group generated on the memory card are displayed on the color LCD panel 35 (step 702).

Next, when a selection signal of a representative image file is input from the user input portion INP to the DSP 507 through the microcontroller 512 (step 704), information on a group to which the selected representative image file belongs is displayed on the color LCD panel 36 (Step 705, refer to FIG. 11A).

Next, when a signal to request reproduction of a representative voice file is input from the user input portion INP to the DSP 507 through the microcontroller 512 (step 706), the representative voice file of a group to which the selected representative voice file belongs is reproduced (Step 707). For example, a representative voice file having a content that "a picture taken with friends, Hong and Han, at Surak mountain on 15 April 2002" is reproduced. When a representative image file is selected, a representative voice file corresponding thereto can be automatically reproduced.

Next, when a signal to reselect a representative data file is input from the user input portion INP (Step 708), all image files in a group to which the reselected representative image file belongs are displayed on the color LCD panel 35 (Step 709, refer to FIG. 11B). Here, if an image file (the seventh file) is a motion picture file, an image at the first frame of the motion picture file is displayed together with a mark 35c indicating a motion picture file. Also, when a voice data file corresponding to a image file (the fourth or fifth file) exists, the image file is displayed together with a mark 35b indicating the information.

Next, when a screen return signal is input from the user input portion INP, the program returns to Step 702. Otherwise, the following steps are continuously executed (Step 710).

When a signal to select an image file is input from the user input portion INP (Step 711), the selected image file is magnified and displayed (Step 712, refer to FIG. 11C). When a signal to request reproduction of a voice file is input from the user input portion INP to the DSP 507 through the microcontroller 512 (Step 713), a voice file corresponding to the selected image file is reproduced (Step 714). For example, a

representative voice file having a content that "a picture taken with friends, Hong and Han, at the entrance of Surak mountain" is reproduced. When an image file is selected and displayed, a voice file corresponding thereto can be automatically reproduced.

5       Next, when an end signal is input from the user input portion INP, the execution of the program ends (Step 715). Otherwise, whether a return signal is input from the user input portion INP is input is checked (Step 716). When the return signal is input, the program returns to Step 709. Otherwise, Step 713 is executed.

10       While the present invention has been particularly shown and described with reference to exemplary embodiments thereof, it will be understood by those of ordinary skill in the art that various changes in form and details may be made therein without departing from the spirit and scope of the present invention as defined by the following claims.

#### [Effect of the Invention]

15       As described above, in the data file management method according to the present invention, a particular directory is set as a present directory in an initialization step, an index according to the order of generation of representative voice files and data files is applied in a file generation step, the data files are grouped by unit of the representative voice file according to the index of the data files in a group generation  
20       step, and the representative data file and the representative voice file of each group are reproduced in a reproduction files. Accordingly, a user of a portable digital device can easily manage one's own data files without using other devices. Also, the data files of the user can be automatically grouped in the particular directory and reproduced.

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